

"Marked-Up" Specification
DIGITAL PRESSURE GAUGE

Field of the invention

The present invention relates to a digital pressure gauge, especially to a digital pressure gauge with prompting and/or ^{warning} ~~warning~~ functions.

5 Background of the invention

According to the regulation of U.S. code for standard pressure gauge (ANSI-SP9), the commercially available digital pressure gauge requires calibration after 10,000 times of operation to ensure the accuracy thereof.

Moreover, according to the regulation of European code (EN1060-3: 1997
10 code 9.2a), the digital pressure gauge requires calibration after 2 years of operation to ensure the accuracy thereof.

However, the current digital pressure gauge is generally provided ^{the} function of detecting operation times and duration. Therefore, the users ^{do not} ~~have not~~ sufficient information for their digital pressure gauges and the accuracy of the
15 digital pressure gauge cannot be ensured.

Summary of the invention

It is the object of the present invention to provide a digital pressure gauge with prompting and/or ^{warning} ~~warning~~ functions, whereby the user is informed after the digital pressure gauge is used ^{for an excessive number of} ~~with excessive~~ times and/or duration ^{for that} calibration ^{is required}.
20

To achieve above object, the present invention provides a digital pressure gauge, which comprises a power supply, an input button unit, a pressure sensor, a display unit, a ^{warning} ~~warning~~ unit, and a control unit. The control unit counts ^{at the number of} operation times and/or operation duration of the digital pressure gauge and

generates ^{an} alarm through the display unit and the ^{warning} ~~warning~~ unit when the counted ^{number of} ~~operation times~~ and/or operation duration of the digital pressure gauge exceeds a threshold.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawings in which:

Brief description of drawings:

Fig. 1 shows a block diagram of the present invention;

Fig. 2 shows a circuit diagram of the present invention; and

Fig. 3 shows a control flowchart of the digital pressure gauge after manufacture.

Detailed description of the invention

With reference now to Figs. 1 and 2, the present invention is intended to provide a digital pressure gauge with prompting and/or ^{warning} ~~warning~~ functions. The digital pressure gauge according to a preferred embodiment of the present invention comprises a power supply 1, a pressure sensor 2, an input button unit 3, a display unit 4, a ^{warning} ~~warning~~ unit 5 and a control unit 6.

The power supply 1 is composed of a voltage-regulating IC U1, capacitors C33-C35 and a battery BT1 and is functioned to supply voltage to the components connected thereto.

The pressure sensor 2 is composed of ICs U3A-U3D, U8, resistors R22, R23, R34, R35 and capacitors C14, C15, etc. The pressure sensor 2 is used to generate a signal in response to a sensed pressure. In the preferred embodiment of the present invention, the pressure sensor 2 is used to sense blood pressure in

a vessel.

The input button unit 3 is composed of a switch SW, a resistor R9 and a capacitor C10 and is used to operate the digital pressure gauge.

The display unit 4 is composed of a liquid crystal display (LCD), and resistors R5-R7, and is functioned to display sensed pressure and ~~warning~~^{warning} message.⁵

The ~~warning~~^{warning} unit 5 is composed of a transistor Q5, resistors R18, R24, R25, beeper Bz and light emitting diode (LED) etc. The ~~warning~~^{warning} unit 5 is activated by the control unit 6 to enable the beeper Bz or the light emitting diode (LED).

The control unit 6 is composed of a microprocessor U5, a memory U6, transistors Q3, Q4, Q5 and Q7, and crystal Y2. The control unit 6 is connected to the power supply 1, the pressure sensor 2, the input button unit 3, the display unit 4, and the ~~warning~~^{warning} unit 5. Moreover, the control unit 6 counts the ~~number of~~^{number of} operation ~~times~~^{times} and/or operation duration of the digital pressure gauge and compares the counted operation ~~times~~^{times} and/or operation duration of the digital pressure gauge with respect to a threshold value. The threshold value is predetermined before ~~the pressure gauge is sold~~^{the pressure gauge is sold} and can be modified by ~~a~~^a user, such as a nurse.

When the control unit 6 detects that the operation ~~times~~^{number of times} and/or operation duration of the digital pressure gauge ~~exceeds~~^{exceeds the} predetermined threshold, the control unit 6 drives the beeper Bz of the ~~warning~~^{warning} unit 5, or drives the LED, or drives the LCD for ~~warning~~^{warning} the user.

Fig. 3 shows the control flowchart of the digital pressure gauge after manufacture. At a step 31, the whole screen of the LCD is driven to flash. At a

step 32, the counter is reset to zero. At a step 33, the sensed pressure is displayed. At a step 34, the count is increased by one. At a step 35, the control unit 6 ^{determines} ~~determines~~ whether a threshold is reached. If false, the procedure is returned to step 33, else, at a step 36, ^g an alarm is generated to prompt and/or ^{warn the} ~~warn~~ user.

To sum up, the digital pressure gauge with prompting and/or ^{warning} ~~warning~~ functions according to the present invention can comply ^{with} ~~the~~ regulation codes in ~~the~~ U.S. or in Europe ^{and} an alarm is generated to prompt and/or ^{warn the} ~~warn~~ user ^{for that} ~~for that~~ calibration ^{is required} ~~is required~~. Therefore, the accuracy of the digital pressure gauge can be ensured.

Although the present invention has been described with reference to the preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof. Various substitutions and modifications have ^{been} suggested in the foregoing description, and others will occur to those of ordinary skill in the art. For example, the threshold can be modified at ^a ~~a~~ user's disposal. The ^{warning} ~~warning~~ unit can ^{warn the} ~~warn~~ user by sound, lighting, vibration or the combination thereof. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

Abstract

A digital pressure gauge comprises a power supply, an input button unit, a pressure sensor, a display unit, a ^{warning} ~~warning~~ unit, and a control unit. The control unit counts ^{the number of 3} ~~an~~ operation ^{times} and/or operation duration of the digital pressure gauge and generates ^{an} alarm through the display unit and the ^{warning} ~~warning~~ unit when the counted ^{number of 5} ~~operation~~ ^{times} and/or operation duration of the digital pressure gauge exceeds a threshold.